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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/533,428

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Tadashi Suzuki

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05/23/2008

CLARIANT CORPORATION
INTELLECTUAL PROPERTY DEPARTMENT
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EXAMINER

ZHAO, XIAO SI

ART UNIT

PAPER NUMBER

4172

MAIL DATE

DELIVERY MODE

05/23/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/533,428	Applicant(s) SUZUKI ET AL.	
	Examiner XIAO ZHAO	Art Unit 4172	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 8/1/2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 3-4, 11-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-2, 5-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) 3-4, 11-14 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/29/2005, 6/30/2005, 12/18/2006, 2/20/2007, 8/1/2007</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

A telephone call was made to Mr. Bisulca at (704)331-7151 to request an oral election to the restriction and election of species requirements below. Mr. Bisulca elected claims 1-11 and thus claims 12-14 are withdrawn from examination. Within claims 1-11, an election of species was required on claims 2-4 and claims 10-11; Mr. Bisulca elected claim 2 and claim 10 and thus claims 3-4 and 11 are also withdrawn from examination. Claims 1-14 are pending.

Election/Restrictions

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1-11, drawn to a coating solution comprising a polysilazane, a diluting solvent, and a catalyst.

Group II, claim(s) 12-14, drawn to a method for improving at least one characteristic of a surface of a base material.

PCT: Lack of Unity *Priori*

2. Lack of unity of invention may be directly evident "a priori," that is, before considering the claims in relation to any prior art, for example, independent claims to A + X, A + Y, X + Y can be said to lack unity a priori as there is no subject matter common to all claims.

In the instant case, the invention of Group I is drawn to a coating solution comprising a polysilazane, a diluting solvent, and a catalyst; whereas the invention of group II is drawn to a method for improving at least one characteristic of a surface of a base material. Since there is no subject matter common to all groups, the restriction is proper for the reasons set forth above where lack of unity of invention is evident “a priori”.

3. This application contains claims directed to the following patentably distinct species:

- a. Claims 2-4, each claim drawn to a coating solution according to claim 1, wherein the diluting solvent is selected from various solvents.
- b. Claims 10-11, each claim drawn to the coating solution of claim 1, wherein the polysilazane is synthesized by reacting different compounds with base to form adducts of the reactant.

The species are independent or distinct because claims to the different species recite the mutually exclusive characteristics of such species. In addition, these species are not obvious variants of each other based on the current record.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, claim 1 is generic.

There is an examination and search burden for these patentably distinct species due to their mutually exclusive characteristics. The species require a different field of search (e.g., searching different classes/subclasses or electronic resources, or

employing different search queries); and/or the prior art applicable to one species would not likely be applicable to another species; and/or the species are likely to raise different non-prior art issues under 35 U.S.C. 101 and/or 35 U.S.C. 112, first paragraph.

Applicant is advised that the reply to this requirement to be complete must include (i) an election of a species to be examined even though the requirement may be traversed (37 CFR 1.143) **and (ii) identification of the claims encompassing the elected species**, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

The election of the species may be made with or without traverse. To preserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the election of species requirement, the election shall be treated as an election without traverse. Traversal must be presented at the time of election in order to be considered timely. Failure to timely traverse the requirement will result in the loss of right to petition under 37 CFR 1.144. If claims are added after the election, applicant must indicate which of these claims are readable on the elected species.

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the species unpatentable over the

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prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other species.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which depend from or otherwise require all the limitations of an allowable generic claim as provided by 37 CFR 1.141.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-2, and 5-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Kondou et al. (US 6383641).

Claims 1-2, and 5-9 are drawn to a coating solution comprising a polysilazane having a Si-H bond, a diluting solvent, and a catalyst. The diluting solvent is either a petroleum solvent, an aromatic solvent, or an alicyclic solvent, an ether, a halogenated hydrocarbon, or a terpene mixture. The diluting solvent further comprises one or more solvents selected from xylene, methylcyclohexane, and ethylcyclohexane. The polysilazane is 0.1 to 35% or 0.5 to 10% by weight of said coating solution. The catalyst is 0.01 to 30% by weight based on a pure (100%) polysilazane. The catalyst is selected from the group consisting of an organic acid, an inorganic acid, peroxide, and others. The polysilazane is an inorganic polysilazane synthesized by reacting SiH_2Cl_2 with a

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base to form an adduct of SiH_2Cl_2 and then reacting the adduct of SiH_2Cl_2 with ammonia.

Kondou et al. teach a coating solution for coating a coating agent with a solvent and catalyst with other additives in which the coating agent is a polysilazane (col. 18, 40-47). The polysilazane has silicon atoms bonded with hydrogen (example 38 and 39) and can also be a perhydropolysilazane (col. 19, 8-10). Perhydropolysilazane contains Si-H bonds. The diluting solvent for dissolving polysilazane includes aromatic solvents, halogenated hydrocarbon, and ethers and can also include xylene and methylcyclohexane (col. 19, 55-65). The catalyst can be organic acids and inorganic acids (col. 20, 40-50) and is blended from 0.01 to 10 part by weight to 100 parts by weight of polysilazane (col. 20, 63-67). The perhydropolysilazane is 10 wt% of the coating solution (col. 38, 38-40).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kondou et al. (US 6383641) as applied to claims 1-2 and 5-9 in view of Shimizu et al. (US 5922411).

Claim 10 is drawn to an inorganic polysilazane having a Si-H bond which is synthesized by reacting SiH_2Cl_2 with a base to form an adduct of SiH_2Cl_2 and then reacting the adduct of SiH_2Cl_2 with ammonia.

Kondou et al. teach all the limitations of claim 1 but fails to teach that the polysilazane is an inorganic polysilazane having a Si-H bond which is synthesized by reacting SiH_2Cl_2 with a base to form an adduct of SiH_2Cl_2 and then reacting the adduct of SiH_2Cl_2 with ammonia.

Shimizu et al. teach a synthesis of perhydropolysilazane (Reference Example 1) in which dichlorosilane was mixed with a base to form an adduct ($\text{SiH}_2\text{Cl}_2 \cdot 2\text{C}_5\text{H}_5\text{N}$) of SiH_2Cl_2 and furthered reacted with purified ammonia (col. 16 45-48). It would have been obvious that the polysilazane taught by Shimizu et al. can be used as the polysilazane coating solution of Kondou et al. because Kondou et al. discloses that

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examples of polysilazane include polysilazane disclosed in JP-A-9-31333 and that those polysilazane may be used in the invention. US 5922411 is also published as EP0781815A which claims priority of JP-A-9-31333.

Conclusion

Claims 1-2, and 5-10 are rejected. Claims 3-4, and 11-14 are withdrawn.

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to XIAO ZHAO whose telephone number is (571)270-5343. The examiner can normally be reached on Monday to Friday 7:30 am EST to 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vickie Kim can be reached on (571)272-0579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Xiao S Zhao/
Examiner, Art Unit 4172

/Alain L. Bashore/
Primary Examiner, Art Unit 1792